A THIRD PARTY REVIEW OF LAKE WINNIPEGOSIS COMMERCIAL FISHERY MANAGEMENT ISSUES

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EXECUTIVE SUMMARY

Symbion Consultants are pleased to present our report on the Third Party Review of Lake Winnipegosis Commercial Fishery Management Issues. As directed by the Terms of Reference, much of the information and opinions required to analyze the issues and develop a plan for the management of the fishery were acquired through an extensive consultation process. Key stakeholder groups consulted with included commercial fishers, First Nations and recreational fishers. Provincial fisheries managers also were a key part of the consultation process.

The Indendent Review Team (IRT) also relied upon a fairly large volume of DNR Fisheries Branch file data in preparing the report. The material reviewed consisted of reports generated by index netting and commercial sampling data, Lake Winnipegosis Fisheries Management Advisory Board meeting minutes, and other relevant Fisheries Branch correspondence and reports concerning the management of the Lake Winnipegosis commercial fishery.

The Lake Winnipegosis walleye fishery collapsed in the mid 1960s (Figure 1). Since about 1965, maximum commercial harvests of walleye (approximately 300,000 kg) have been comparable to minimum commercial harvests experienced prior to the collapse (1931 - 1964). The walleye fishery has been operating in this state of collapse during the last 30 years. Commercial harvests since 1992 represent the most prolonged period of extremely low commercial walleye harvests within the last 30 years.

REHABILITATION PLAN ELEMENTS

A plan for the walleye fishery's recovery should include the following elements:

- A Reduction in Commercial Harvest
- A Reduction in Cormorant Predation
- A Reduction in the Harvest of Pre-Spawned Walleye During Spawning Migrations
- Increased Walleye Stocking Rates
- Habitat Monitoring and Enhancement

The Independent Review Team perceives the first three elements as being high in priority and of relatively equal importance. Recovery of walleye stocks is dependent upon a reduction in walleye mortality from all sources both human and avian. Recovery also is dependent upon increased stocking rates and habitat monitoring and enhancement. However, the Team views these elements as being lower in priority because they address walleye reproductive success, which we believe to be less of a factor in the fishery's recovery than is walleye mortality.

BARRIERS TO PLAN IMPLEMENTATION

The plan is a composite of opinions and ideas presented to the IRT by the stakeholders during the consultation process. None of the elements are new and most have been discussed at length over the last 30 years. However, implementation of all the elements as a comprehensive rehabilitation package has never been tried.

Identifying and describing the elements of a plan is a simple exercise relative to the challenges presented by implementing all of the plan's elements. The IRT understands that implementing the plan in its entirety is a complex process and will require a major commitment of time, effort and resources by all stakeholders. There are three major barriers confronting implementation. These are;

- The Poor Relationship Between DNR and Commercial Fishers
- First Nations' Dissatisfaction with Their Role in Lake Management
- The Fairford Dam

APPROACHES TO PLAN IMPLEMENTATION

The IRT has identified two approaches to plan implementation. Each approach is based upon different fundamental assumptions about the barriers.

The first approach is based upon the assumption that the barriers cannot be overcome, in a reasonable amount of time, through discussion and negotiations between the key stakeholder groups (commercial fishers, First Nations and DNR). An approach based upon this assumption, would involve unilateral action by the Minister of Natural Resources resulting in a rehabilitation plan being implemented without any further consultation with First Nations or commercial fishers. The IRT has labelled this approach Unilateral and Drastic.

The second approach is based upon the assumption that the barriers can be overcome, in a reasonable amount of time, through discussion and negotiations between the key stakeholder groups. An approach based upon this assumption would impose a moratorium on

the unilateral and drastic approach pending concentrated efforts by the key stakeholder groups to embark upon a process designed to overcome the barriers and jointly implement the rehabilitation plan. The IRT has labelled this approach Multilateral and Moderate.

The IRT believes that the unilateral and drastic approach to plan implementation offers the best chance for a rapid recovery of Lake Winnipegosis walleye stocks. The IRT's preferred set of plan elements under this approach would be as follows:

- Complete Closure of Both the Open Water and Winter Commercial Fisheries
- A Reduction in Cormorant Predation
- A Reduction in the Harvest of Pre-Spawned Walleye During Spawning Migrations
- Increased Walleye Stocking Rates
- Habitat Monitoring and Enhancement

THE IRT'S PREFERRED APPROACH

The IRT is concerned that the unilateral and drastic approach does not address the barriers to plan implementation in a way which establishes the foundation for a future management framework that is more effective than past frameworks. The IRT believes that it would be prudent to impose a moratorium on the unilateral and drastic approach, pending successful negotiation of a Memorandum of Understanding (MOU) between First Nations, commercial fishers and DNR. The MOU would establish that these parties agree that the elements of the plan identified by the IRT are necessary for the rehabilitation of walleye stocks. The MOU would acknowledge that the parties would have flexibility with respect to certain methods and timing of some of the plan's elements; specifically methods to reduce commercial harvest potential, cormorant populations, and Treaty harvest of pre-spawned walleye, but that there would be no flexibility with respect to whether or not the element would be part of the plan. In other words, the MOU would have the major stakeholders agreeing to the essential elements of the walleye rehabilitation plan. More specifically;

- Commercial fishers would agree to reduce their harvest as part of a Lake Winnipegosis walleye rehabilitation program/plan.
- DNR would agree to authorize a program for cormorant population control on Lake Winnipegosis

- First Nations would agree to aggressively promote the idea of a reduced harvest of pre-spawned walleye by Treaty persons during spring spawning migrations .

- DNR would agree to make a commitment to a program of habitat enhancement and protection and an independent evaluation of fishers' proposal for improvements to fish habitat at the Fairford dam would be part of that commitment.

- DNR and non-aboriginal fishers would agree to acknowledge the special interests of First Nations in the fishery and acknowledge the need for a specific allocation of the Lake Winnipegosis fishery resource to First Nations.

- DNR would agree to make a commitment to increase walleye stocking rates in Lake Winnipegosis and commercial fishers and First Nations would agree to contribute toward the costs of walleye stocking.

The major barriers to implementing the rehabilitation plan would have to be confronted during the process of arriving at the MOU. If the parties are successful in arriving at the MOU, the three major barriers to plan implementation would be reduced significantly or overcome. The IRT believes that the services of a professional mediator would be useful in assisting the parties in addressing the barriers and arriving at the MOU.

The IRT views the MOU as a necessary first step in creating a new management framework for the Lake Winnipegosis fishery. The MOU would establish the initial parameters for a transfer of management authority from government to a Lake Winnipegosis Stakeholders Fisheries Management Authority (LWSFMA). The LWSFMA would assume responsibility and authority for developing specific programs and actions for each element of the plan. Initially, the LWSFMA would assume authority for aspects of lake management that relate primarily to walleye rehabilitation. In the longer term, the intent would be for the LWSFMA to gradually assume authority for other aspects of lake management. The Minister would have final authority to approve the LWSFMA's recommendations, although there would be an implicit understanding that most recommendations consistent with the parameters established by the MOU would be approved by the Minister.

The IRT would prefer to see the LWSFMA provided with a ten year time frame to implement the walleye rehabilitation plan, with a review of LWSFMA's effectiveness after the first five years. Renewal of the LWSFMA's authority for a second five year term would be dependent upon a positive review. Should the LWSFMA be unsuccessful in rehabilitating the walleye fishery, the IRT strongly recommends that the Minister of Natural Resources lift the moratorium on the unilateral and drastic approach and implement the IRT's preferred plan under this approach.

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1.0 INTRODUCTION

Symbion Consultants are pleased to present our report on the Third Party Review of Lake Winnipegosis Commercial Fishery Management Issues. This report includes;

- a description of our approach to the review;
- a discussion of our understanding of the Lake Winnipegosis commercial fishery;
- a description of the essential elements of a plan for the walleye fishery's recovery;
- identification and discussion of the major barriers to plan implementation;
- identification and discussion of two approaches to plan implementation and;
- a discussion of the Independent Review Team's (IRT) preferred approach to plan implementation.

Also included in the report are two appendices. Appendix A describes the schedule of stakeholder consultation and the number of commercial fishers who attended commercial fishers' meetings. Appendix B presents a review of the management issues initially identified by the Study Terms of Reference. Readers are encouraged not to discount or overlook the information contained in Appendix B simply because it has been appended. This review of the issues was critical to forming our understanding of the fishery and developing a plan for its rehabilitation.

2.0 APPROACH

As directed by the Terms of Reference, much of the information and opinions required to analyze the issues and develop a plan for the management of the fishery were acquired through an extensive consultation process. Key stakeholder groups consulted with included commercial fishers, First Nations and recreational fishers. Provincial fisheries managers also were a key part of the consultation process.

The IRT also relied upon a fairly large volume of DNR Fisheries Branch file data in preparing the report. The material reviewed consisted of reports generated by index netting and commercial sampling data, Lake Winnipegosis Fisheries Management Advisory Board meeting minutes, and other relevant Fisheries Branch correspondence and reports concerning the management of the Lake Winnipegosis commercial fishery.

3.0 OUR UNDERSTANDING OF THE LAKE WINNIPEGOSIS FISHERY

The Lake Winnipegosis walleye fishery collapsed in the mid 1960s (Figure 1). Since about 1965, maximum commercial harvests of walleye (approximately 300,000 kg) have been comparable to minimum commercial harvests experienced prior to the collapse (1931 - 1964). The walleye fishery has been operating in this state of collapse during the last 30 years. Commercial harvests since 1992 represent the most prolonged period of extremely low commercial walleye harvests within the last 30 years.

There are two main schools of thought on the reasons for the collapse of the commercial fishery. Government biologists and fisheries managers point to walleye harvests in excess of 1.5 million kg in the late 1930s and early 1940s. Commercial fishers are quick to point out that the collapse of the walleye fishery coincided with the construction and operation of the Fairford dam. It is not productive and beyond the terms of reference of this report to comment on the relative merits of each position. However, this divergence of opinion is mentioned early in the report because it has contributed significantly to the prolonged depressed state of the fishery and the failure of the fishery to improve. A more detailed discussion of the role this difference of opinion plays in the recovery of the fishery is presented in Section 5.3 of the report.

There are a number of factors which have hindered efforts to rehabilitate the walleye fishery. These are;

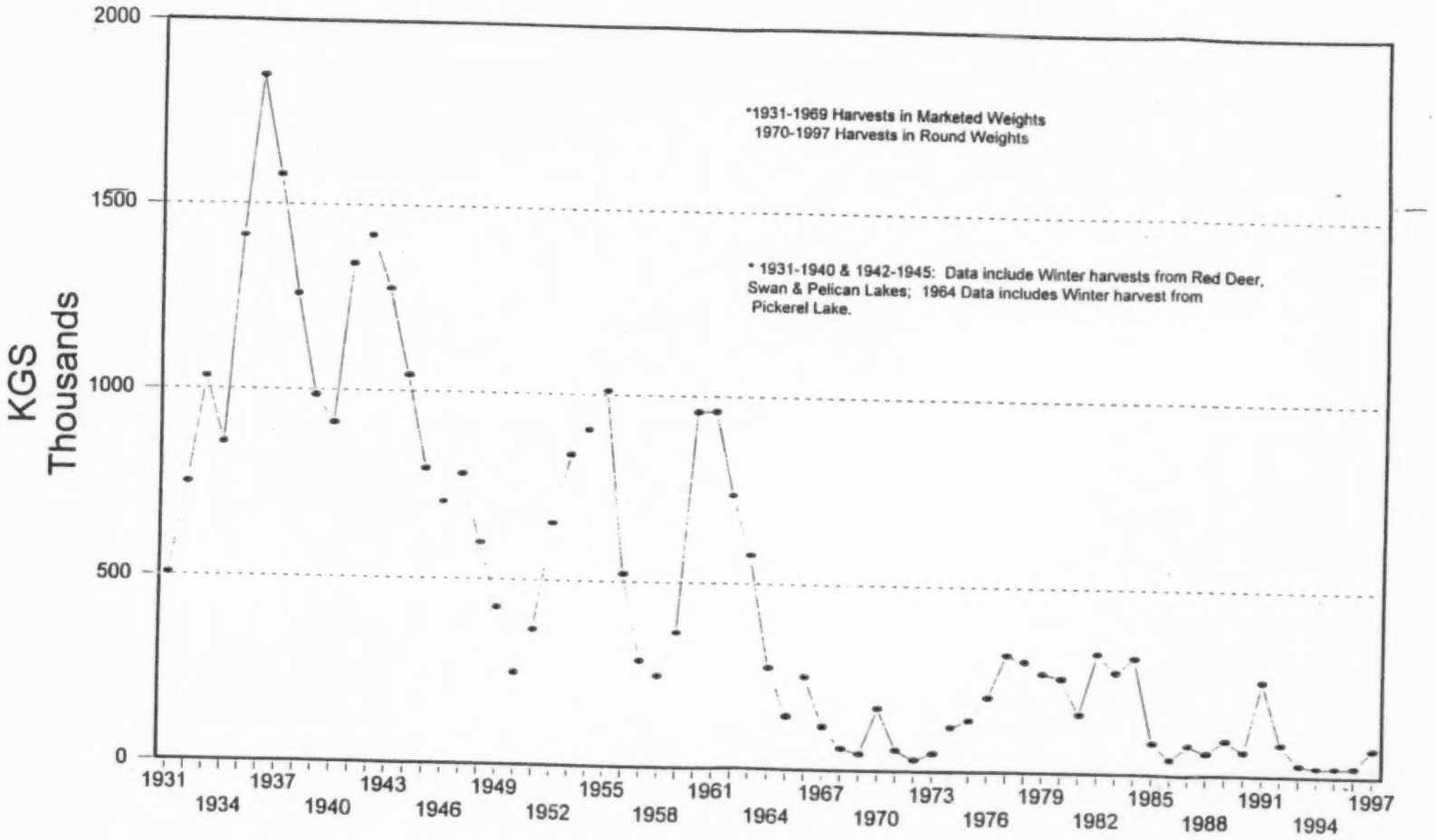
An Over Allocation of Commercial Harvest Rights Relative to that Required to Allow for Rehabilitation of Walleye Stocks

Currently, commercial harvest rights allocated to the open water fishery total 263,000 kgs of walleye and the winter fishery has no restrictions placed upon the amount of walleye that may be harvested. Any strong year classes that are produced are quickly cropped off by the commercial fishery as 3 and 4 year old fish. Three and four year old males may spawn twice, while three and four year old females may spawn once, if at all. Few spawners from strong year classes survive to be 5 + and to contribute to creating a more stable fishery with higher average annual harvests.

Cormorant Predation

Cormorant predation has limited the amount of fish that would otherwise have been recruited to fishers's nets (See Appendix B: Section 1.5). The cormorant population has been estimated to be greater than 100,000 birds based on a 1989 nest count of 51,759. Annual predation by these birds was estimated at 7.7 million kgs of all fish species. Walleye were estimated to account for 0.2% or 15,400 kg and perch 27.4% or 2,109,800 kg of this total. The impacts of cormorant predation are particularly relevant for walleye and perch because

FIGURE 1: Lake Winnipegosis Commercial Walleye Harvests 1931 - 1997



of their higher value. Failure to address the issue of cormorant predation over the last 10 or so years has hindered walleye rehabilitation because commercial fishers are reluctant to consider programs which would reduce their harvest of walleye without a concurrent program to control cormorant populations. In absence of a cormorant control program, commercial fishers perceive any benefits of a reduction in commercial walleye harvests as simply being dissipated by cormorants consuming any increases in walleye or perch populations before they are recruited to the commercial fishery.

Harvest of Pre-Spawned Fish During Spawning Migrations

The harvest of pre-spawned walleye during spawning migrations by persons with Treaty rights appears to have increased over the last 5 - 8 years and there also appears to be a significant number of individuals fishing on a commercial scale under the authority of Treaty rights. There are no hard data documenting the extent of the increase, but all stakeholders including First Nation representatives held this perception. All stakeholders also agreed that, given the depressed state of walleye stocks, this additional harvest at such a critical time in the reproductive cycle, was hindering recovery of the walleye fishery.

Reasons cited for increased Treaty fishing activity during the spring spawning run include; dissatisfaction with the share of economic benefits that First Nation people derive from the fishery; frustration over the Provincial regulation of the Treaty fishery prior to the Sparrow decision in 1989; and frustration over the lack of meaningful input First Nation persons have had into Lake Winnipegosis management decisions.

An Ineffective Management Framework

The current management framework consists of DNR staff providing technical assistance to an Advisory Board of commercial fishers. The ineffectiveness of the current management framework stems from a fundamental difference of opinion between Advisory Board members and DNR managers concerning the cause of the walleye fishery's collapse and an appropriate program for rehabilitation of walleye stocks.

Both Advisory Board members and DNR managers agree that walleye stocks are depressed. Opinions diverge concerning the cause of the depressed state. Board members maintain the Fairford dam, cormorants, harvest during the spawning run, habitat degradation and commercial harvest pressure[1] are responsible for the decline. DNR managers believe that a long history of over harvest, excess harvest rights held by the open water commercial fishery and harvest during the spawning run are responsible for the decline.

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[1]Some Board members view the 3" winter fishery as detrimental to long term fishery viability because of its harvest of small pike and mullet. Few Board members expressed concern over the 3" fishery adversely impacting walleye stocks. Some Board members felt that an increase to 4.25" mesh would increase escapement of walleye and contribute toward rehabilitation of walleye stocks. Other Board members indicated that using 4.25" mesh would increase the harvest of large female walleye and increase escapement of pike. Both of these effects are perceived by commercial fishers as being detrimental to the long term rehabilitation of walleye stocks.

Opinions concerning ways to reverse the decline and rehabilitate walleye stocks also are divergent. DNR managers have proposed to close permanently the open-water fishery, to limit the amount of walleye that can be harvested during the winter season to approximately 78,926 kgs, to close critical spawning tributaries and lake areas to all fishing from April 1 to June 1 and to facilitate habitat enhancement, spawn collection, rearing pond and fry stockings as means to rehabilitate walleye stocks.

The Advisory Board has proposed cormorant control, enhanced fish passage facilities at the Fairford dam, habitat enhancement/restoration, rearing pond and fry stocking, and a restricted harvest of walleye during the spring spawning run by all users including Treaty fishers.

Despite a strong desire from both groups to rehabilitate the fishery and some areas of agreement concerning rehabilitation initiatives, neither side seems able or willing to compromise to reach an agreed upon rehabilitation program.

Relatively Low Stocking Rates

Since 1991, walleye fry have been stocked in the lake in 1994 (750,000) and 1998 (531,000) and a total of 14.2 million fry have been stocked in rearing ponds around the lake in 1994, 1995, 1996 and 1998. Stocking rates were much higher prior to the collapse of the fishery. Between 1937 and 1960, the number of fry stocked annually in Lake Winnipegosis averaged 57.5 million. Around the time the walleye fishery collapsed (1961-1966) stocking rates declined to an average of 16.3 million and between 1967 and 1991, fry stockings ranged from less than 2.5 million (1982) to about 52 million (1976). Since the collapse of the walleye fishery, relatively high stocking rates ($\geq$ 25 million) occurred from 1972 to 1976 and from 1986 to 1989 ($\geq$ 15 million). Between 1971 and 1988, a total of 66 million fry also were stocked into pickerel rearing ponds.

The number of fry which can be stocked into the lake or rearing ponds is partly a function of the size of the spawning population in Lake Winnipegosis. Prior to the fishery's collapse larger spawning populations produced large numbers of fry. Since the collapse, spawning populations have declined and the Lake Winnipegosis fishery has had to rely upon fry produced primarily at Lake Manitoba spawn camps.

Although the effectiveness of walleye stocking is inconclusive and controversial, there is some evidence that stocking at sufficient rates can augment recovery in fisheries where populations have collapsed and/or are severely depressed. It is very unlikely that Lake Winnipegosis stocking rates in the last decade or so have been adequate to cause any significant improvement in the fishery.

4.0 THE ELEMENTS OF A PLAN FOR THE WALLEYE FISHERY'S RECOVERY

A plan for the walleye fishery's recovery should be comprehensive and address all of the factors that have prevented recovery. In the Independent Review Team's opinion, a plan that does not address one or more of the factors would be deficient and less effective in promoting recovery of the fishery than one that does address all of the factors.

A plan for the walleye fishery's recovery should include the following elements[2]:

- A Reduction in Commercial Harvest
- A Reduction in Cormorant Predation
- A Reduction in the Harvest of Pre-Spawned Walleye During Spawning Migrations
- Increased Walleye Stocking Rates
- Habitat Monitoring and Enhancement

Although all elements are necessary, they are not all equal in priority or importance. The Independent Review Team perceives the first three elements as being high in priority and of relatively equal importance. Recovery of walleye stocks is dependent upon a reduction in walleye mortality from all sources both human and avian. If mortality is reduced from one source only, the reduction in total mortality may not be directly proportionate to the reduction in that source. Sources which have not been reduced could increase and mitigate the effects on total mortality. Consequently, recovery of walleye stocks would be compromised. Recovery also is dependent upon increased stocking rates and habitat monitoring and enhancement. However, the Team views these elements as being lower in priority because they address walleye reproductive success, which we believe to be less of a factor in the fishery's recovery than is walleye mortality.

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[2]An effective management framework is also an essential element of a plan. The options for a more effective management framework for the fishery are discussed in detail in Sections 5.0 and 6.0 of the report.

4.1 A Reduction in Commercial Harvest

Throughout the 1990s, harvest effort appears to have varied with walleye year class strength. When 3 and 4 year old walleye year classes are weak, fewer fishers participate in the fishery[3]. When strong 3 and 4 year old year classes appear to be strong, as was the case in 1991, more fishers participate in response to strong year classes. Left unchecked, this potential for the commercial fishery to expand and contract its effort in response to strong year classes has prevented a sufficient number of 3 and 4 year olds from strong year classes to survive to be 5+ and to contribute to creating a more stable fishery with higher average annual harvests.

There are a variety of methods available to reduce commercial harvest. There are direct methods which include a complete closure of the commercial fishery, a reduction in TIQs in the open water fishery, and a walleye quota for the winter fishery. Indirect methods to reduce commercial harvest potential include mesh size increases, shorter seasons, and closing certain areas of the lake to commercial fishing.

When to reduce commercial harvest on Lake Winnipegosis appears to be as important as how (i.e. the appropriate method or combination of methods) to reduce it. Regardless of the method, a reduction in allowable harvest when 3 and 4 year old year classes are weak could be redundant, given the fishery's recent history of voluntary reductions in effort when year classes are weak. It appears the most effective time to reduce allowable harvests is when 3 and 4 year old year classes are strong. A reduction in allowable harvests when a relatively large year class(es) is/are poised to be recruited into the fishery would be more effective and result in a more rapid recovery of walleye stocks than one imposed when 3 and 4 year old year classes are weak.

The Independent Review Team's preference would be for a direct reduction (complete closure of the commercial fishery, or a reduction in TIQs in the open water fishery, and/or a walleye quota for the winter fishery) in allowable commercial harvests when relatively large year class(es) is/are poised to be recruited into the fishery. We acknowledge that commercial fishers would be most resistant to a direct reduction in allowable harvests when year classes are strong and that this approach places a heavy onus on biological monitoring to predict correctly the presence of large year classes.

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[3]It should also be noted that destruction and deterioration of infrastructure (docks, harbours, packing stations) has resulted in involuntary reductions in effort throughout the 1990s.

4.2 A Reduction in Cormorant Predation

Throughout the late 1980s and until 1996 or 1997, Lake Winnipegosis cormorant populations were at levels that detracted from recovery of the walleye fishery. Their impact on recovery stemmed from the direct impact cormorant predation had on walleye (see Appendix B: Section 1.5). Cormorant populations also had indirect impacts on the walleye fishery's recovery resulting from predation on perch[4] (also see Appendix B: Section 1.5) and from the relationship between cormorant control programs and programs to reduce commercial harvest potential[5].

A program to reduce cormorant predation has to establish a cormorant population size that does not detract significantly from the walleye fishery's recovery. Many Lake Winnipegosis commercial fishers perceive current (June/July 1998) cormorant populations to be at "acceptable" levels. Commercial fishers report populations declined significantly during 1997 when high water flooded many nesting sites and Newcastle's disease killed many individuals.

A program to reduce cormorant predation also has to establish an effective and acceptable form of population control. DNR has proposed egg puncturing as a method which destroys the embryo and prevents re-nesting. Other factors to consider in implementing a program to maintain populations at current levels include the number of eggs that could be punctured without causing an unacceptable decline in cormorant populations and a communication program to explain the rationale for cormorant population control as part of the Lake Winnipegosis walleye fishery recovery plan.

The Independent Review Team's preference would be for a program of cormorant population control that documents the size and distribution of current populations, maintains populations at current levels, and addresses public concerns that may arise. The Team believes that commercial fishers would and should be willing to participate in such a program and that their participation should reduce the cost of implementing and operating the program.

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[4]An improved perch fishery could result in less harvest effort being directed at walleye.

[5]Increased walleye volumes that might be available to the commercial fishery annually if cormorant predation were reduced by 50% range from a low of 7,700 kg to a high of 137,500 kg. Increased perch volumes that might be available to the commercial fishery annually if cormorant predation were reduced by 50% range from a low of 263,725 kg to a high of 2,637,250 kg.

4.3 A Reduction in the Harvest of Pre-Spawned Walleye During Spawning Migrations

Increased harvests throughout the 1990s during spawning migrations, are hindering recovery of the walleye fishery. Hard data regarding the quantity of walleye harvested by Treaty persons, anglers and others during the spawning migration are lacking. There does appear to be a perception among all stakeholders that there are a significant number of individuals fishing on a commercial scale under the authority of Treaty rights. A reduction in the harvest of pre-spawned walleye during spawning migrations is necessary for recovery of the walleye fishery.

The harvest by non-Treaty/Aboriginal persons of pre-spawned walleye during spawning migrations is prohibited by legislation and regulation. Additional enforcement and public education efforts may be required to ensure maximum compliance with these regulations both during and after implementation of a plan for recovery of the Lake Winnipegosis walleye fishery. Anglers may also have to be restricted from fishing in Lake Winnipegosis tributaries until June 1 or later. There was not a clear consensus among commercial fishers as to whether the spring creeks mullet fishery should be included in a prohibition on fishing during the walleye spawning period. However, the majority of commercial fishers appear to favour elimination of this fishery because they believe small pike and walleye are caught in trap net leads and because they believe harvesting mullet during their spawning run jeopardizes the sustainability of mullet populations. The elimination of this fishery could be considered as part of a program to reduce the harvest or pre-spawned walleye during spawning migrations.

Enacting regulations applicable to Treaty persons to prohibit or reduce their harvest of walleye during spawning migrations would be problematic. Regulations restricting Treaty fishing during walleye spawning in the Lake Winnipegosis region may have to be concurrent with a complete closure of all fishing, commercial and sport. Such regulations would have to meet the tests of Sparrow[6] to withstand a legal challenge and the ability to meet these tests could be undermined without a complete closure of all fishing. It should be noted that even where commercial fisheries in Manitoba have been closed (Nelson and Saskatchewan River Commercial Sturgeon fisheries), Treaty fishing has not been regulated through provincial or federal legislation.

An alternative to direct regulation of the Treaty fishery is to have First Nation governments become actively involved in encouraging Treaty persons to restrict use of their Treaty rights where the exercise of those rights is detrimental to the recovery of Lake Winnipegosis walleye populations. This alternative is more consistent with existing provincial initiatives and less confrontational than direct regulation.

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[6]First allocation of the fishery resource after conservation to Treaty/subsistence fishing.

The Independent Review Team's preference would be for a reduction in the harvest of pre-spawned walleye that results from First Nation governments convincing Treaty persons that such a reduction is consistent with First Nation values and necessary for the recovery of Lake Winnipegosis walleye populations. This approach would avoid the costs and risks associated with legal challenges that could result from a regulated approach. It also would allow for consideration of options for reducing commercial harvest potential other than a complete closure of all commercial fishing. We acknowledge that implementing this approach will require an expanded role for First Nations in lake management.

4.4 Increased Walleye Stocking Rates

Walleye fry stocking rates during the 1990s were insufficient to have a meaningful impact on the rehabilitation of Lake Winnipegosis walleye populations (see Appendix B: Section 1.4). Increased stocking rates would complement the other elements of the rehabilitation plan.

Although the effectiveness of walleye stocking is controversial, there are several reasons why stocking rates should be increased. If stocking is going to occur, it should occur at rates where there is some reasonable chance of it benefitting the fishery. Secondly, support from commercial fishers for stocking and rearing ponds is extremely high. Commercial fishers appear willing to contribute toward costs through contributions of cash and uncompensated labour. Third, an enhanced stocking and rearing pond program would facilitate implementation of options for reducing commercial harvest potential. Spawn taking operations on Lake Winnipegosis tributaries also can be used to monitor the size of spawning runs, which are one indicator of population status, and may act as a deterrent to the illegal harvest of pre-spawned fish.

The Independent Review Team's preference would be to see increased stocking rates on Lake Winnipegosis. In the short term, increased rates will be dependent upon an allocation of walleye fry from Lake Manitoba sources similar to that which occurred during 1986-1989. In the long term, the dependence upon Lake Manitoba fry should decrease as rehabilitation efforts result in increased spawning populations in Lake Winnipegosis. As spawning populations increase, so will the need for hatchery facilities. Commercial fishers and First Nations should assume a significant degree of responsibility for this element of the rehabilitation program. In exchange for this responsibility, fishers and First Nations would be expected to contribute cash and labour to the stocking program. The Province should assist commercial fishers in overcoming legal and administrative barriers associated with allowing fishers to contribute towards stocking and hatchery maintenance programs through deductions from gross commercial fishing revenues.

4.5 Habitat Monitoring and Enhancement

The quantity and quality of walleye habitat in Lake Winnipegosis and its tributaries is sufficient to support the rehabilitation of walleye stocks. Compared to most of the Province's major commercial fisheries, Lake Winnipegosis and its tributaries have been relatively unimpacted by large scale industrial (hydro-electric, forestry, mining, agriculture) development. There are however, a number of locations where habitat problems have been noted by commercial fishers. The Ducks Unlimited dam on the Steeprock River was cited by commercial fishers as obstructing fish movement. Work related to the Highway #10 diversion was perceived by commercial fishers as adversely impacting fish habitat in the Overflowing River. Commercial fishers also believe dredging work in Steeprock Bay has adversely impacted walleye populations. Beaver dams were mentioned as impeding fish movement in many of the smaller tributaries and works related to agricultural drainage around the southern portion of the lake were thought to be adversely affecting walleye reproduction.

The Independent Review Team's preference would be to see existing habitat problems corrected or mitigated and to see an on-going habitat monitoring program to protect future fish habitat degradation. An increased commitment to mitigating existing habitat concerns and to future monitoring would facilitate negotiations concerning reductions in commercial harvests. Commercial fishers, First Nations, and sport fishing organizations based in Swan River, Dauphin and Winnipeg should assume a significant degree of responsibility for this element of the rehabilitation program.

5.0 BARRIERS TO IMPLEMENTING THE PLAN

The IRT believes the plan addresses the concerns of all stakeholders and represents a sound basis for the rehabilitation of walleye stocks. The elements of the plan are not unique. The plan is a composite of opinions and ideas presented to the IRT by the stakeholders during the consultation process. None of the elements are new and most have been discussed at length over the last 30 years. Some of the elements, like walleye fry stocking, have been ongoing since 1937, while others, like a reduction in commercial harvest were implemented previously (1986-1989). However, implementation of all the elements as a comprehensive rehabilitation package has never been tried.

Identifying and describing the elements of a plan is a simple exercise relative to the challenges presented by implementing all of the plan's elements. The IRT understands that implementing the plan in its entirety is a complex process and will require identifying barriers to implementation and a major commitment of time, effort and resources by all stakeholders to overcome barriers. There are three major barriers confronting implementation. These barriers must be acknowledged and discussed before an implementation process can be developed to address them.

5.1 The Poor Relationship Between DNR and Commercial Fishers

During the 1970s and 1980s, the relationship between DNR and commercial fishers could be described as argumentative. There were major areas of disagreement on how the lake should be managed, but despite these differences, agreement was reached on certain management/rehabilitation initiatives[7], and both sides cooperated during their implementation. The current relationship between DNR and commercial fishers has deteriorated to where it can only be described as extremely adversarial and contemptuous. Both sides have lost respect for the others' responsibilities, skills, knowledge and experience. The result has been almost no implementation of rehabilitation initiatives since 1989. Both sides have proposed rehabilitation initiatives, but discussions concerning these appear to have resulted only in further polarization of positions and attitudes. This relationship constitutes a major barrier to implementation of the rehabilitation plan and it must be improved before implementation can even be considered.

5.2 First Nations' Dissatisfaction with Their Role in Lake Management

There are two First Nations, Pine Creek and Sapotawayek, with Reserves on the shores of Lake Winnipegosis. The political leadership of both expressed dissatisfaction over their role in Lake Winnipegosis management. This dissatisfaction extends beyond the issue of walleye rehabilitation and includes dissatisfaction over the share of economic benefits that First Nation people derive from the fishery. The political leadership of Pine Creek First Nation has been more vocal in expressing their dissatisfaction. The IRT interpretation of their position is that constitutional provisions and subsequent court decisions giving First Nations first priority of allocation to the fishery resource after conservation allocations, warrant an increased role for First Nations in lake management. The increased harvest of pre-spawned walleye is viewed by the IRT as a tactic First Nation persons are using to bring attention to their situation.

As discussed in Section 4.3, First Nation cooperation is an integral part of implementing certain elements of the management plan and maintaining flexibility in the plan. That cooperation will be difficult to obtain without a more explicit recognition by government and non-aboriginal fishers of the unique interests in the fishery held by First Nation persons and incorporation of those interests into a lake management structure. The current dissatisfaction among First Nation governments and individuals derives from a failure to adequately incorporate their interests into lake management and constitutes a barrier to plan implementation.

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[7]Stocking and rearing pond programs during the 1970s and 1980s were cooperative efforts between DNR and commercial fishermen as was the closure of the open water fishery from 1986 to 1989.

5.3 The Fairford Dam

The Fairford Dam is at the root of both past and current poor relationships between DNR and commercial fishers. The dam is a "flash point" that is reached on a regular basis and thwarts rehabilitation efforts. The Fairford Dam was mentioned at virtually every fishers's meeting during the consultation process and during the IRT's discussions with DNR it was obvious to the Team that the dam is still an extremely sensitive topic with fisheries managers.

An enormous amount of DNR time and resources have been spent over the last 20 or so years attempting to convince fishers that walleye do not move in significant numbers between Lake Winnipegosis and systems below the Fairford dam. These expenditures have not convinced fishers, rather they have only strengthened their belief in this theory of fish migration and not contributed to, but detracted from, rehabilitation of the walleye fishery.

As long as the Fairford Dam remains a prominent issue, it will constitute a barrier to implementation of the rehabilitation plan. The dam is an issue around which all fishers rally whenever proposals are advanced to reduce commercial harvest potential. The debate over fish migration is resurrected and very quickly the focus on rehabilitation is lost and efforts are refocussed on the migration debate.

Reducing the prominence of the Fairford Dam issue is necessary if the rehabilitation plan is going to be implemented via a multilateral stakeholder approach. The IRT believes that by viewing the dam from a broader fish habitat enhancement perspective, it might assist in reducing the prominence of the fish migration aspect of the dam. During the course of the review, the Team made a number of observations which support this broader perspective.

- The dam was and is a significant negative alteration to fish habitat.

- The effects of the dam on fish habitat were left unmitigated for 23 years.

- The current fish ladder is less than optimum and does not fully mitigate impacts to fish habitat presented by the dam.

- Improvements to fish habitat at the Fairford dam are desirable and consistent with Federal and provincial policy

- The fishers sponsored proposal for improved fish passage should be evaluated as a means for enhancing fish habitat at the Fairford Dam.

These observations provide a rationale for including the dam as a part of the fish habitat element of the rehabilitation plan, without placing unnecessary and unproductive emphasis on the fish migration issue. Refocussing in this direction is necessary to overcome this barrier.

6.0 TWO APPROACHES TO PLAN IMPLEMENTATION

The first step in Plan implementation is an explicit acknowledgement that the barriers exist. The second step is identifying ways to deal with them. The IRT's two approaches to plan implementation are essentially two approaches to addressing the barriers. Each approach is based upon different fundamental assumptions about the barriers.

The first approach is based upon the assumption that the barriers cannot be overcome, in a reasonable amount of time, through discussion and negotiations between the key stakeholder groups (commercial fishers, First Nations and DNR). An approach based upon this assumption would involve unilateral action by the Minister of Natural Resources resulting in a rehabilitation plan being implemented without any further consultation with First Nations or commercial fishers. The IRT has labelled this approach Unilateral and Drastic.

The second approach is based upon the assumption that the barriers can be overcome, in a reasonable amount of time, through discussion and negotiations between the key stakeholder groups. An approach based upon this assumption would impose a moratorium on the unilateral and drastic approach pending concentrated efforts by the key stakeholder groups to embark upon a process designed to overcome the barriers and jointly implement the rehabilitation plan. The IRT has labelled this approach Multilateral and Moderate.
A more detailed discussion of each approach is presented in the following sections.

6.1 The Unilateral and Drastic Approach

This implementation approach would have decisions concerning the plan's elements made unilaterally by the Minister of Natural Resources. The IRT's preferred set of plan elements under this approach would be as follows:

- A Reduction in Commercial Harvest Potential

Complete closure of both the open water and winter commercial fisheries beginning when strong 3 and 4 year old year classes are on the verge of being recruited into the commercial fishery and continuing until the walleye stocks are sufficiently recovered to support a sustained annual commercial harvest between 200,000 and 300,000 kgs.

- A Reduction in Cormorant Predation

A program of cormorant population control that documents the size and distribution of current populations, maintains populations at current levels, and addresses public concerns that may arise.

- A Reduction in the Harvest of Pre-Spawned Walleye During Spawning Migrations[8]

Regulations restricting Treaty fishing in Lake Winnipegosis tributaries during walleye spawning would be enacted under the Federal Fisheries Act upon recommendation from Manitoba. During the spring spawning period, the Treaty fishery would be allowed to continue fishing in the lake, except in the immediate vicinity of tributaries, and in the lake and tributaries throughout the rest of the year.

- Increased Walleye Stocking Rates

In the short term, increased rates would be dependent upon an allocation of walleye fry from Lake Manitoba sources similar to that which occurred during 1986-1989. In the long term, the dependence upon Lake Manitoba fry should decrease as rehabilitation efforts result in increased spawning populations in Lake Winnipegosis.

- Habitat Monitoring and Enhancement

Existing habitat problems would be corrected or mitigated and an on-going habitat monitoring program to protect future fish habitat degradation would be implemented.

The major advantage of this approach is that the objective of walleye rehabilitation is placed clearly at the forefront. Social and economic objectives are secondary to biological objectives. DNR fisheries managers would be given a clear mandate to rehabilitate walleye stocks and not to reopen the fishery to harvest (commercial, Spring treaty or spring angling) until rehabilitation is complete.

A second major advantage of this approach is that it offers a high potential for the most rapid recovery of walleye stocks.

The major disadvantage of this approach is that there would be little support among commercial fishers for a complete closure of the commercial fishery and little support among First Nations for regulations restricting Treaty fishing during walleye spawning. During the fishers consultation process, the IRT discussed complete and partial closures (open water only) of the commercial fishery. Very few fishers voiced any support for a closure of the open water fishery and all fishers voiced their opposition to a complete closure. First Nation representatives also expressed opposition to a regulated approach to the Treaty harvest of pre-spawned walleye. There would be considerable discontent among both of the major stakeholder groups if this approach were implemented.

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[8]Anglers also would be restricted from harvesting walleye in Lake Winnipegosis tributaries during the spawning period.

A second major disadvantage of this approach is that it would likely require some form of income replacement for commercial fishers displaced during the closure. The IRT has not attempted to quantify income replacement costs, although they would be in the order of hundreds of thousands of dollars annually, until rehabilitation is complete.

A third disadvantage of this approach is that it would probably result in fishers and First Nations being unwilling to participate in stocking, cormorant control and habitat programs.

6.2 The Multilateral and Moderate Approach

The multilateral and moderate approach would have the plan described by the IRT implemented jointly by the major stakeholders. Implementation of the plan by stakeholders would be contingent upon the successful negotiation of a Memorandum of Understanding (MOU) between commercial fishers, First Nations and DNR. The MOU would establish that these parties agree that the elements of the plan identified by the IRT are necessary for the rehabilitation of walleye stocks. The MOU would acknowledge that the parties would have flexibility with respect to certain methods and timing of some of the plan's elements; specifically methods to reduce commercial harvest potential, cormorant populations, and Treaty harvest of pre-spawned walleye, but that there would be no flexibility with respect to whether or not the element would be part of the plan. In other words, the MOU would have the major stakeholders agreeing to the essential elements of the walleye rehabilitation plan. More specifically;

- Commercial fishers would agree to reduce their harvest as part of a Lake Winnipegosis walleye rehabilitation program/plan.

- DNR would agree to authorize a program for cormorant population control on Lake Winnipegosis

- First Nations would agree to aggressively promote the idea of a reduced harvest of pre-spawned walleye by Treaty persons during spring spawning migrations .

- DNR would agree to make a commitment to a program of habitat enhancement and protection and an independent evaluation of fishers' proposal for improvements to fish habitat at the Fairford dam would be part of that commitment.

- DNR and non-aboriginal fishers would agree to acknowledge the special interests of First Nations in the fishery and acknowledge the need for a specific allocation of the Lake Winnipegosis fishery resource to First Nations.

- DNR would agree to make a commitment to increase walleye stocking rates in Lake Winnipegosis and commercial fishers and First Nations would agree to contribute toward the costs of walleye stocking.

The major barriers to implementing the rehabilitation plan would have to be confronted during the process of arriving at the MOU. If the parties are successful in arriving at the MOU, the three major barriers to plan implementation would be reduced significantly or overcome. The IRT believes that the services of a professional mediator would be useful in assisting the parties in addressing the barriers and arriving at the MOU.

The major advantage of this approach is that it is likely to have more support among commercial fishers and First Nations than the unilateral and drastic approach. A second advantage is that it has the potential to reduce or eliminate some of the barriers to walleye rehabilitation. A third advantage is that the need for income replacement as compensation for reductions in commercial harvest potential would be less.[9] A fourth advantage is that commercial fishers and First Nations would be more likely to participate in stocking, cormorant control and habitat programs.

The major disadvantage of this approach is that social and economic objectives will be integrated with biological objectives, with the likely result being a more prolonged walleye recovery period than would be the case under the unilateral and drastic approach.

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[9]Assuming some level of minimum/reasonable income opportunities could be maintained during a program of commercial harvest reduction.

7.0 THE IRT'S PREFERRED APPROACH TO PLAN IMPLEMENTATION

The IRT believes that the unilateral and drastic approach to plan implementation offers the best chance for a rapid recovery of Lake Winnipegosis walleye stocks. However, the IRT is concerned that this approach does not address the barriers to plan implementation in a way which establishes the foundation for a future management framework that is more effective than past frameworks. Should the unilateral and drastic approach be adopted, and stocks are successfully rehabilitated, the issue of an appropriate and effective framework for lake management will still be unresolved. Because the main stakeholder groups will have been excluded from plan implementation, there will not be a sound basis for including stakeholders in management decisions that will have to be made once the lake is reopened. Consequently, any plan for managing the lake with rehabilitated walleye stocks will have to either continue with the unilateral model of lake management or attempt to build the necessary relationships between government and stakeholders that will allow for a more collaborative model.

Given this concern, the IRT believes that it would be prudent to impose a moratorium on the unilateral and drastic approach, pending successful negotiation of the MOU between First Nations, commercial fishers and DNR described earlier. Many of the barriers to plan implementation and lake management will have to be confronted during the MOU negotiating process. As such, successful negotiation of the MOU will result in an initial understanding among stakeholders concerning walleye rehabilitation programs and also contribute toward building the relationships between government and stakeholders necessary for a more effective future management framework. Although the multilateral and moderate approach is likely to result in a more prolonged walleye recovery period, it is preferred by the IRT because of its greater potential to facilitate an improved framework for future lake management.

After successful negotiation of the MOU, plan implementation will have to occur within a management framework. As discussed previously, the current framework has been ineffective and the IRT believes it would be inappropriate to try and implement the rehabilitation plan using the existing framework.

The IRT views the MOU as a necessary first step in creating a new management framework for the Lake Winnipegosis fishery. The MOU would establish the initial parameters for a transfer of management authority from government to a Lake Winnipegosis Stakeholders Fisheries Management Authority (LWSFMA). The LWSFMA would assume responsibility and authority for developing specific programs and actions for each element of the plan. Initially, the LWSFMA would assume authority for aspects of lake management that relate primarily to walleye rehabilitation. In the longer term, the intent would be for the LWSFMA to gradually assume authority for other aspects of lake management.

The IRT's preference would be for stakeholder representation on LWSFMA to match stakeholder dependence on the fishery. A suggested structure for the LWSFMA is as follows:

Four Commercial Fishers Representatives
- Pine Creek/CamperDuck
- Winnipegosis
- Dawson Bay
- Shoal River

Two First Nation Representatives
- Pine Creek First Nation
- Sapotaweyak Cree Nation

One Recreational Angling Representative

One Tourism/Regional Economic Development Representative

One Chairperson

The commercial fishers representatives would be elected by commercial fishers from each area. First Nation representatives would be selected according to criteria defined by each First Nation. The recreational angling and tourism/regional economic development representatives could be appointed by the Minister of Natural Resources and the chairperson would be an individual mutually agreed to by all members of the LWSFMA.

DNR staff would not participate directly in LWSFMA decision-making, but would be depended upon for technical support and assistance in many aspects of program implementation.

Once created, the first tasks the LWSFMA would have to undertake would be to develop operating/decision-making procedures and specific programs and actions for each element of the walleye rehabilitation plan. The IRT would prefer to see the LWSFMA provided with a reasonable amount of time to complete these tasks and subsequently provide the Minister of Natural Resources with a recommended set of detailed programs for each element of the walleye rehabilitation plan. The Minister would have final authority to approve the LWSFMA's recommendations, although there would be an implicit understanding that most recommendations consistent with the parameters established by the MC[illegible] would be approved by the Minister.

The IRT would suggest that the LWSFMA be provided with a ten year time frame to implement the walleye rehabilitation plan, with a review of LWSFMA's effectiveness after the first five years. Renewal of the LWSFMA's authority for a second five year term would be dependent upon a positive review. Should the LWSFMA be unsuccessful in rehabilitating the walleye fishery, the IRT strongly recommends that the Minister of Natural Resources lift the moratorium on the unilateral and drastic approach and implement the IRT's preferred plan under this approach.

APPENDIX A: STAKEHOLDER CONSULTATION

TABLE A1: Schedule of Stakeholder Consultation

DATE	STAKEHOLDER GROUP	LOCATION	ATTENDANCE
May 25, 1998	Inter-Mountain	Dauphin	2
May 25, 1998	Dawson Bay Commercial Fishers	Dawson Bay	16
May 26, 1998	Swan Valley Sports Fish Enhancement Association	Swan River	2
May 26, 1998	Shoal River Commercial Fishers	Shoal River	5
May 26, 1998	Sapotaweyak Cree Nation	Sapotaweyak Reserve	2
May 26, 1998	Winnipegosis Commercial Fishers	Winnipegosis	18
May 27, 1998	Pine Creek Camper/Duck Commercial Fishers	Duck Bay	24
May 27, 1998	Pine Creek First Nation	Pine Creek Reserve	1
June 17, 1998	FFMC	Winnipeg	1
June 22, 1998	Inter-Mountain Recreational Fishermen's Association	Dauphin	2
June 22, 1998	Swan Valley Sports Fish Enhancement Association	Swan River	2
June 22, 1998	Dawson Bay Commercial Fishers	Dawson Bay	18
June 23, 1998	Sapotaweyak Cree Nation	Sapotaweyak Reserve	3
June 23, 1998	Winnipegosis Commercial Fishers	Winnipegosis	20
June 24, 1998	Pine Creek Camper/Duck Commercial Fishers	Pine Creek Reserve	4
June 26, 1998	Manitoba Wildlife Federation	Winnipeg	1
July 9, 1998	Lake Winnipegosis Advisory Board	Dauphin	7

A second meeting with Shoal River Commercial Fishers was scheduled for June 23, 1998. Commercial fishers from Shoal River chose not to attend this meeting. The location of the second meeting with Pine Creek Camper/Duck Commercial Fishers (June 24, 1998) was changed suddenly by fisher's representatives from Duck Bay to Pine Creek Reserve. Many fishers may have had insufficient notice of the location change, thus accounting for the low attendance at this meeting.

APPENDIX B: REVIEW OF MANAGEMENT ISSUES

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1.0 A REVIEW OF THE ISSUES

The review of issues is based upon consultations with stakeholders (Appendix A), consultation with DNR resource managers and a review of data and other background materials relevant to Lake Winnipegosis fishery issues.

1.1 Sustainability and Rehabilitation of Walleye Stocks

Stakeholders' Perceptions

All stakeholders agree that walleye stocks are depressed. Opinions diverge concerning the cause of the depressed state. Commercial fishermen believe the Fairford dam, cormorants, harvest during spawning run, habitat degradation and commercial harvest pressure are responsible for decline. DNR managers believe the open water fishery and harvest during spawning run are responsible for the decline. During our discussions with DNR managers, they were particularly adamant that the Fairford dam and cormorants have had little if any adverse impact on walleye populations, or that they should be a factor worthy of consideration in any plan to rehabilitate walleye stocks.

Opinions concerning ways to rehabilitate walleye stocks also are divergent. DNR managers have proposed to close permanently the open-water fishery, to limit the amount of walleye that can be harvested during the winter season to approximately 79,380 kg, to close critical spawning tributaries and lake areas to all fishing from April 1 to June 1 and to facilitate habitat enhancement, spawn collection, rearing pond and fry stockings as means to rehabilitate walleye stocks.

The majority of fishermen generally agree that walleye rehabilitation requires enhanced fish passage facilities at the Fairford dam, cormorant control, habitat enhancement/restoration, rearing pond and fry stocking, and a restricted harvest of walleye during the spring spawning run by all users including Treaty fishermen. Some fishermen are in favour of eliminating the open-water fishery, the 3" winter perch fishery, and the spring mullet fishery. There was also discussion among fishermen concerning the merits of an increase in mesh size to 4.25" and closure of certain lake areas to all fishing. Support for these proposals was mixed, with no clear consensus either for or against their implementation. There was little support among fishermen for a walleye quota for the winter fishery.

Pine Creek First Nation is calling for the creation of a Lake Management Authority that would be responsible for, but not limited to, recommending actions aimed at rehabilitating walleye stocks.

Sport fishing representatives view either a closure or significant reduction in the commercial fishery along with a reduction in walleye harvests during the spawning period as key components of walleye rehabilitation. Sport fishing representatives also see habitat enhancement/restoration, rearing pond and fry stocking, as necessary elements of a rehabilitation program.

Quantitative assessments and descriptions of the status and sustainability of the Lake Winnipegosis walleye fishery

Harvest Data

A review of the commercial harvest of walleye during the last 22 years (1976 - 1997) (Table 1) illustrates the extent of decline in the commercial fishery for walleye. During the 10 years (1976 - 1985) prior to closure of the open water fishery, walleye harvests ranged between 85,789 kgs (1985) and 324,186 kgs (1982) and averaged 250,331 kgs. During the open water closure, the winter fishery harvested 43,208 kgs, 80,364 kgs and 59,339 kgs in 1986, 1987 and 1988 respectively. During the 9 years (1989 - 1997) since the open water fishery has been reopened, walleye harvests ranged between 24,196 kgs (1995) and 255,638 kgs (1991) and averaged 75,827 kgs. Despite a significant reduction in harvest potential and commercial effort during the three year open water fishery closure, the commercial fishery for walleye is less productive than it was prior to the closure.

Index Netting Data

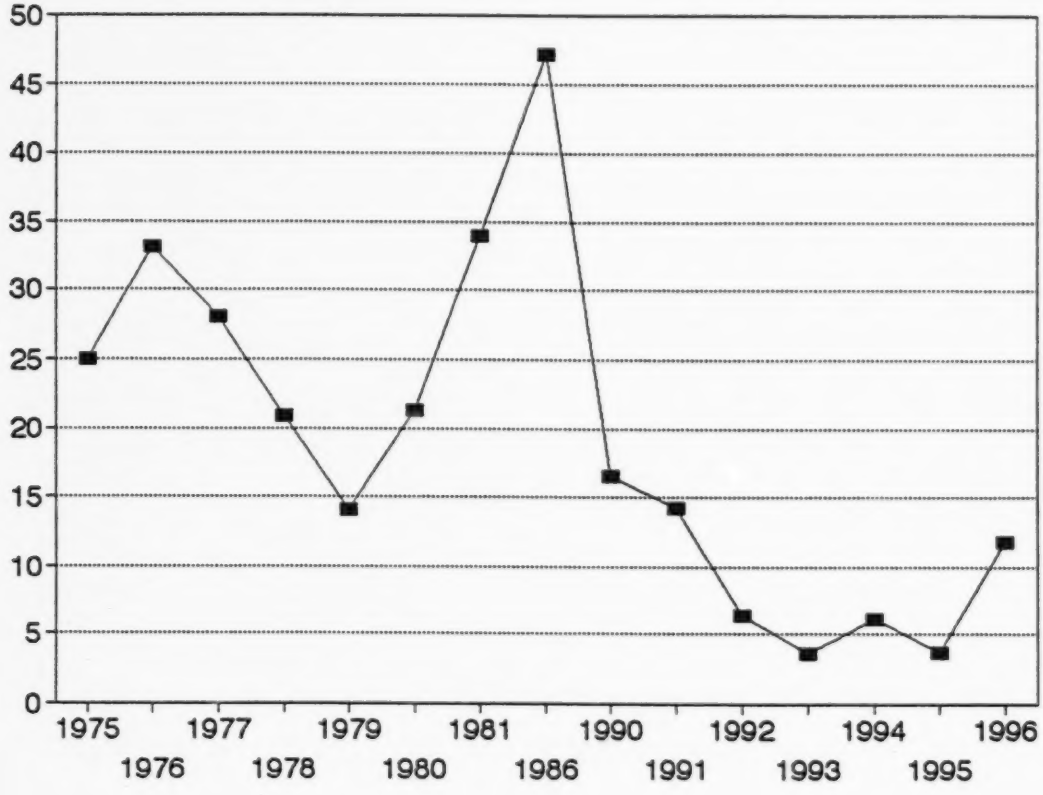
Index netting was conducted in 15 of the 22 years between 1975 and 1996. Changes in methods and the availability of data reports between 1975 and 1986 preclude a detailed comparison of results for all mesh sizes. CUE (number per 100 yards) data for 3" mesh have been summarized for the entire period and as such may be an indicator[1] of the relative abundance of walleye between 1975 and 1996. Figure 1 illustrates the index netting CUE results for 3" mesh between 1976 and 1996. To the extent that these data may be an indicator of the relative abundance, they appear to illustrate a decline in relative abundance during 1977, 1978 and 1979, and increase in relative abundance during 1980, 1981 and 1986, and a decline between 1990 and 1996. With the exception of 1990, CUE values are lower in every year during the 1990s than even the lowest value experienced during the 1975 - 1986 period.

[1]Comparability of these data may be limited if the timing and/or location of sets prior to 1990 differed significantly from that which occurred between 1990 and 1996.

TABLE 1: Commercial Walleye Harvests (Kgs Round) 1976 - 1997

POST CLOSURE PERIOD					
YEAR	SUMMER	%	WINTER	%	TOTAL
1997	35,018	46	40,733	54	75,751
1996	7,484	28	19,006	72	26,490
1995	17,663	73	6,533	27	24,196
1994	13,375	55	11,113	45	24,488
1993	17,176	55	14,136	45	31,312
1992	68,998	80	17,516	20	86,514
1991	193,224	76	62,414	24	255,638
1990	38,146	60	25,464	40	63,610
1989	80,120	85	14,320	15	94,440
TOTAL	471,204	69	211,235	31	682,439
AVERAGE	52,356	69	23,471	31	75,827
SUMMER CLOSURE PERIOD					
YEAR	SUMMER	%	WINTER	%	TOTAL
1988	0	0	59,339	100	59,339
1987	0	0	80,364	100	80,364
1986	0	0	43,208	100	43,208
TOTAL	0	0	182,911	100	182,911
AVERAGE	0	0	60,970	100	60,970
PRE CLOSURE PERIOD					
YEAR	SUMMER	%	WINTER	%	TOTAL
1985	76,096	89	9,693	11	85,789
1984	287,007	91	27,049	9	314,056
1983	188,336	69	86,095	32	274,431
1982	283,835	87	40,351	12	324,186
1981	135,002	84	25,690	16	160,692
1980	239,905	94	15,978	6	255,883
1979	238,294	89	30,455	11	268,749
1978	290,913	97	10,318	3	301,231
1977	305,035	96	11,060	3	316,095
1976	178,023	88	24,178	12	202,201
TOTAL	2,222,446	89	280,867	11	2,503,313
AVERAGE	222,244	89	28,087	11	250,331

FIGURE 1: Walleye 3" Mesh CUE (# of Fish/100 Yds) 1975 - 1996



1987 Fish Stock Assessment

An assessment of Lake Winnipegosis walleye stocks conducted in 1987[2] indicated that Lake Winnipegosis walleye stocks were growing and maturing at rates near the upper limits of their scope in Manitoba waters. These rapid growth and maturity rates were cited as symptoms of the inability of walleye stocks to cope with further exploitation stress.

Commercial Sampling Data

Commercial sampling data indicate that during the 10 years (1976 - 1985) prior to closure of the open water fishery, the majority (not less than 65%) of the commercial walleye harvest consisted of fish 4 and 5 years old. During the 9 years (1989 - 1997) since the open water fishery has been reopened, the majority (not less than 43%) of the commercial walleye harvest consisted of fish 3 and 4 years old. Post closure, walleye are growing faster and becoming vulnerable to 4" mesh at a younger age. Increased growth rates are one indicator of a population under stress.

1.2 Viability of the Commercial Fishery

The choice of a mesh size which maximizes fishermen's incomes and ensures the long term sustainability of fish stocks is controversial. Fishermen are reluctant to increase minimum mesh size because they are not convinced that reduced harvests/incomes in the short term will be offset by higher and more stable harvests/incomes in the future. Fisheries managers assume that larger mesh sizes are more likely to ensure the long term sustainability of the resource and maximization of economic returns for all Manitobans.

Fishermen are divided concerning the relationships between the viability of the commercial fishery and the use of 3" mesh nets. Some fishermen perceive the 3" winter fishery as being critical to the economic viability of individual fishing enterprises and packing operations. These fishermen tend to be those who fish throughout the entire winter and they see the 3" fishery as providing the opportunity to harvest perch when they are plentiful, and perhaps more importantly as providing volumes of pike and mullet during January and February sufficient to provide revenues required to continue operating. Similarly, some packing station operators view the 3" fishery as critical to maintaining a volume of fish during January and February adequate to continue operating. Other fishermen see the 3" winter fishery as detrimental to the long term viability of the fishery because of its harvest of small pike and mullet. Few fishermen expressed concern over the 3" fishery adversely impacting walleye stocks.

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[2]Lysack, W., 1988. 1987 Lake Winnipegosis fish stock assessment. Manitoba Department of Natural Resources. Fisheries Branch MS Report No. 88-05.

DNR perceive the 3" winter fishery as detrimental to the long term viability of the fishery because of its harvest of small pike. Pike account for a large share of the winter fishery's gross revenues. DNR monitoring of the 3" fishery does not quantify the extent (total biomass, weight, length age, maturity) of the concern over small pike being harvested by the 3" fishery. DNR monitoring of the 3" fishery confirms that during the time this fishery operates, very few walleye are caught in 3" nets.

Fishermen also are divided concerning the relationships between the viability of the commercial fishery and the use of 4" versus 4.25" mesh nets. Some fishermen expressed the opinion that an increase to 4.25" mesh would allow for increased escapement of walleye and contribute toward rehabilitation of walleye stocks. Other fishermen indicated that using 4.25" mesh would increase the incidence of large female walleye in commercial harvests and increase escapement of pike. Both of these effects are perceived as being detrimental to the long term rehabilitation of walleye stocks. All fishermen agreed that in the short term, increasing mesh size to 4.25" would reduce walleye harvests and possibly the harvest of other species resulting in lower total revenues from commercial fishing in the short term. Fishermen were also quick to point out that in order for an increase in minimum mesh size to 4.25" to be effective, it would have to extend to all fisheries in the Lake Winnipegosis "system" including Red Deer, Pelican, Swan, Dauphin and Waterhen Lakes.

DNR perceive an increase in mesh size to 4.25" as contributing toward rehabilitation of walleye stocks. The primary assumption underlying this perception is that increasing mesh size to 4.25" would reduce walleye harvests in the short term, increase escapement of immature female walleye ($\leq$ 3 years old) resulting in a greater proportion of mature spawners in the walleye population and result in a greater and more sustainable harvest of walleye in the long term.

Table 2 reviews the available data comparing the proportion of walleye less than or equal to ($\leq$) 3 years old in 4.25" Index Nets[3] vs. 4" Commercial Nets. The data presented in the Table 2 are inconclusive as to whether an increase to 4.25" would increase the relative escapement of fish 3 years old and younger. The 4"mesh caught relatively less fish 3 years old and younger in 1996 and 1994, caught more in 1987 and caught about the same relative amount in 1993 and 1992. It should be noted that the 4" mesh in the 1987 experimental gang did not catch any fish (0% N = 66 fish) $\leq$ 3 years old.

[3]A standard gang of Index Nets on Lake Winnipegosis does not include the 4"mesh size.

TABLE 2: Comparison of the # of Walleye $\leq$ 3 Years in 4" and 4.25" Mesh Nets

YEAR	4.25" Index Nets % walleye $\leq$ 3 years old	4" Commercial Sample % walleye $\leq$ 3 years old
1996	57% (N = 7 fish)	50% (N = 367 fish)
1995	9% (N = 11 fish)	N.D.
1994	23% (N = 22 fish)	15% (N = 362 fish)
1993	14% (N = 14 fish)	16% (N = 980 fish)
1992	32% (N = 25 fish)	33% (N = 1,952 fish)
1987	4% (N = 51 fish)	25% (N = 277 fish)[4]

The extent to which an increase to 4.25" may reduce total harvest of walleye may be inferred from 1987 Index Netting results. In 1987, the total weight of walleye from 4" index nets was 76.78 kgs. and the total weight of walleye from 4.25" index nets was 60.23 kgs. Based upon these results, an increase in mesh size to 4.25" for the commercial fishery could result in a decrease in walleye harvest of about 21%. However, a key assumption underlying this conclusion is that total commercial effort (total nets lifted) in a 4.25" fishery would be comparable to that exerted in the 4" fishery. It is possible that fishermen would increase total effort if mesh size were increased to 4.25" to compensate for the lower CUE of the 4.25" nets.

[4]It should be noted that this commercial sample was obtained during the winter of 1987-88. A 3" fishery may have been operating during the sampling period and results may not be representative of 4" mesh only. It should also be noted that because this commercial sample was collected during the winter and all other data presented in the table were collected during the fall, the 1987 commercial data may not be representative in terms of age class distribution, of results that would have been obtained had the sample been acquired during the fall season.

1. 3 Protection of Spring Spawning Areas

All groups perceive the need to protect walleye from harvest during the spring spawning period. Commercial fishermen, DNR and sport fishing representatives appear to favour prohibition of all[5] forms of fishing in Lake Winnipegosis and all tributaries at least until June 1 and perhaps to June 15.

First Nations (Pine Creek and Sapotaweyak) are reluctant to sanction any measures that may impinge upon the individual Treaty rights of their members. However, there was recognition among First Nation representatives we talked to of the need to minimize walleye harvests by Treaty persons during the spring spawning period. First Nation representatives felt that a program of education and information could be effective in encouraging Treaty persons to reduce significantly their harvest of walleye during the spring spawning period.

1. 4 Walleye Stocking and Habitat Enhancement

All groups view walleye stocking/rearing pond programs and habitat enhancement as necessary elements of a walleye rehabilitation program. The relative importance of these programs in an overall rehabilitation plan is however, perceived differently by the stakeholders. DNR and sport fishing representatives see habitat enhancement and stocking/rearing pond programs as secondary initiatives that would complement primary initiatives aimed at reducing walleye harvest (permanent closure of open water fishery, conservation closure of spring spawning areas, and a walleye quota for the winter fishery).

Many commercial fishermen indicated that walleye habitat enhancement and stocking/rearing pond programs should be primary components of an overall rehabilitation plan with secondary initiatives aimed at reducing walleye harvest (increasing mesh size to 4.25", closing certain areas of the lake to all fishing and conservation closure of spring spawning areas).

The history of walleye spawn taking and fry stocking on Lake Winnipegosis goes back to 1936 when a hatchery was constructed at Duck Bay. The hatchery operated until the spring of 1981 and was destroyed by fire the following winter. Spawn taking at Duck Bay

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[5]There was not a clear consensus among commercial fishermen as to whether the spring creeks mullet fishery should be included in a prohibition on all fishing during the walleye spawning period. The majority of commercial fishers appear to favour elimination of this fishery because they believe small pike and walleye are caught in trap net leads and because they believe harvesting mullet during their spawning run jeopardizes the sustainability of mullet populations.

commenced again in 1985 with eggs incubated at various facilities within the Province. Spawn taking stopped in 1991 at the request of area fishermen. Spawn taking resumed in 1994 and 1998 in Duck Bay and Overflowing River areas. Area fishermen operated these spawn camps.

The highest rates of walleye stocking occurred between 1937 and 1960 when the number of fry stocked annually in Lake Winnipegosis averaged 57.5M (Min. = 14.3M in 1951; Max. = 97.3M in 1949; N = 23 years). From 1961-1966, stocking rates declined to an average of 16.3M (Min. = 5.1M in 1965; Max. = 36.4M in 1962; N = 6 years). Between 1967 and 1991, fry stockings have ranged from less than 2.5 million (1982) to about 52 million (1976). Relatively high stocking rates occurred from 1972 to 1976 ($\geq$ 25 million; Min. = 25M, Max. = 52M) and from 1986 to 1989 ($\geq$ 15 million; Min = 15M, Max. = 32M). Between 1971 and 1988, a total of 66M fry were stocked into pickerel rearing ponds. Since 1991, fry have been stocked in the lake in 1994 (750,000) and 1998 (531,000) and a total of 14.2M fry have been stocked in rearing ponds around the lake in 1994, 1995, 1996 and 1998.

The effectiveness of Lake Winnipegosis walleye stocking since 1967 can be described as inconclusive and controversial. Rearing ponds have been credited by some DNR staff (Lysack and Edwards) as possibly contributing to short term improvements in the commercial fishery. Commercial fishermen are generally supportive of walleye stocking, but expressed dissatisfaction over the management of various aspects (rearing pond operation and maintenance, fry stocking locations) of past stocking programs and expressed a high degree of scepticism over the number of fry reported to have been stocked in Lake Winnipegosis by DNR. There was a high degree of consensus among commercial fishermen regarding the need for fishermen to take a greater responsibility for any future walleye stocking/rearing pond programs.

Commercial fishermen mentioned several areas where fish habitat was being or had been adversely impacted and rehabilitation was required. The Ducks Unlimited dam on the Steeprock River was cited as obstructing fish movement. Work related to the Highway #10 diversion was perceived as adversely impacting fish habitat in the Overflowing River. Dredging work in Steeprock Bay was believed to have adversely impacted walleye populations. Beaver dams were mentioned as impeding fish movement in many of the smaller tributaries and works related to agricultural drainage around the southern portion of the lake were thought to be adversely affecting walleye reproduction. Many of the rearing ponds around the lake were said to be in need of improvement/repair. Specific ponds mentioned included Burrel Lake, Arpins Lake, and Steeprock Bay rearing ponds. Virtually all commercial fishermen expressed the opinion that the Fairford Dam has prevented fish movement upstream and that the Fairford Dam has had a significant impact on Lake Winnipegosis walleye populations.

1.5 Cormorants

Virtually all commercial fishermen believe cormorant predation is detracting from the recovery of walleye stocks and control of cormorant populations is a necessary component of any plan to rehabilitate walleye stocks. DNR file data indicate that cormorant predation is suppressing recruitment to the commercial fishery and retarding efforts toward its recovery. Currently, fishermen's concern over the impact of cormorant predation on walleye stocks has declined. Reduced concern is a result of lower cormorant population levels due to Newcastle disease and flooding of nesting sites by high water levels in 1997.

DNR has prepared some assessment of cormorant predation on Lake Winnipegosis fish populations. The cormorant population was estimated to be greater than 100,000 birds based on a 1989 nest count of 51,759. Annual predation by these birds was estimated at 7.7 million kgs of all fish species. Walleye were estimated to account for 0.2% or 15,400 kg and perch 27.4% or 2,109,800 kg of this total.

The DNR analysis concluded that cormorant predation was limiting the amount of fish that would otherwise be recruited to fishermen's nets, but did not attempt to quantify in absolute terms the amount of fish that would be recruited to fishermen's nets in absence of cormorant predation or if cormorant predation were reduced.

A perspective on the absolute amount of walleye that could be recruited to fishermen's nets in absence of cormorant predation or if cormorant predation were reduced may be derived based upon the DNR analysis and other published data (Hobson et al)[6]. Assumptions are required concerning the average weight of walleye being consumed by cormorants, survival rates of walleye from the time they are vulnerable to cormorant predation until they are recruited into the commercial fishery, and weight at time of recruitment into the commercial fishery. For example, if the average weight of walleye being consumed by cormorants is assumed to be 0.057 kgs, cormorants consume 270,175 individuals annually, based upon DNR's estimate of walleye biomass consumed at 15,400 kg. If, in absence of cormorant predation, approximately 50% of these walleye (135,100 individuals) survived to be recruited into the commercial fishery at an average weight of 1 kg, an additional 135,100 kg of walleye would be available to the commercial fishery annually. Similarly, if cormorant predation were reduced by 50% an additional 67,540 kg of walleye would be available to the commercial fishery annually. Sixty-seven thousand five hundred and forty kg (67,540) of walleye annually is approximately 90% of average commercial walleye harvest between 1989 and 1997.

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[6]Hobson, K. et al. 1989. Population, Diet and Reproductive Success of Double-crested Cormorants Breeding on Lake Winnipegosis, Manitoba in 1987. Colonial Waterbirds 12: 191-197.

TABLE 3A: Additional Biomass of Walleye Available to Commercial Fishery with 50% Reduction in Cormorant Predation (Weight at Recruitment = 1 kg)

Individual Weight (kgs) at Predation	# of Individuals	Survival Rate to Recruitment	Additional Kgs Available to Commercial Fishery
0.057	270,175	0.1	13,509
0.100	154,000	0.1	7,700
0.028	550,000	0.1	27,500
0.057	270,175	0.25	33,772
0.100	154,000	0.25	19,250
0.028	550,000	0.25	68,750
0.057	270,175	0.5	67,544
0.100	154,000	0.5	38,500
0.028	550,000	0.5	137,500

Table 3A presents a perspective on the range of walleye volumes that might be available to the commercial fishery annually if cormorant predation were reduced by 50%. Increased volumes that might be available to the commercial fishery annually if cormorant predation were reduced by 50% range from a low of 7,700 kg to a high of 137,500 kg.

TABLE 3B: Additional Biomass of Perch Available to Commercial Fishery with 50% Reduction in Cormorant Predation (Weight at Recruitment = 0.250 kg)

Individual Weight (kgs) at Predation	# of Individuals	Survival Rate to Recruitment	Additional Kgs Available to Commercial Fishery
0.10	21,098,000	0.10	263,725
0.05	42,196,000	0.10	527,450
0.10	21,098,000	0.25	659,312
0.05	42,196,000	0.25	1,318,625
0.10	21,098,000	0.50	1,318,625
0.05	42,196,000	0.50	2,637,250

Table 3B presents a perspective on the range of perch volumes that might be available to the commercial fishery annually if cormorant predation were reduced by 50%. Increased volumes that might be available to the commercial fishery annually if cormorant predation were reduced by 50% range from a low of 263,725 kg to a high of 2,637,250 kg.

DNR proposed a cormorant control program in 1992. The program proposed to reduce cormorant populations by puncturing eggs and returning punctured eggs back to the nests. This treatment was supposed to prevent embryos from developing and reduce chances of re-nesting. The program was intended to run for three years at an annual cost of $18,800. A Departmental decision was made not to control cormorant populations on Lake Winnipegosis.

1.6 Management

The current management framework is perceived as being ineffective by both fishermen and DNR. DNR believes the Advisory Board's effectiveness is compromised because it does not represent the views of the majority of fishermen on certain issues like mesh size and the winter perch fishery. Board members do not think the Board is effective because their advice and recommendations are rarely implemented on major issues like cormorant control and the Fairford dam.

The Board has repeatedly expressed concern over cormorant predation and requested the Minister of Natural Resources to impose a program of population control. The Board approved a set of management objectives for the lake in June 1993. The Board also appears to have played an active role in fry stocking and rearing pond operations and received a $25,000 grant in 1995 from the Provincial Fisheries Enhancement Initiative towards construction of a hatchery. A proposal for enhanced fish passage at the Fairford Dam was submitted by the Board to DNR in 1997.

Recently (July, 1997) Board members from Dawson Bay and Camperville-Duck Bay-Pine Creek areas initiated discussions concerning the development of a "Fisheries Management Agreement" between government and fishermen which would allow for "self-management" by fishermen. The concept of self-management was discussed further at the October 1997 meeting with a view to developing separate management strategies for three areas of the lake (North, Middle, and South).

In January 1998, a joint working group composed of representatives from Pine Creek First Nation, Assembly of Manitoba Chiefs and Manitoba Natural Resources proposed the formation of an eight member Lake Winnipegosis Management Board. The Board was to be appointed by the Minister of Natural Resources, with four appointments recommended by Pine Creek First Nation and four recommended by DNR staff. All members were to be local stakeholders in the fishery and were to be mutually acceptable to both Pine Creek First Nation and DNR. An independent chairperson, acceptable to both parties also was to be appointed by the Minister of Natural Resources. Initial terms of reference proposed included;

- making recommendations to the Minister for the management and administration and allocation of fish and fisheries, including fish habitat associated with lake Winnipegosis and;

- establishing management objectives for the Lake Winnipegosis fishery.

The Independent Review Team received (July 1998) a proposal for changes to management from Pine Creek First Nation. The proposal calls for creation of a Lake Management Authority "made up of people representing the many diverse interests on the lake". The Management Authority would make recommendations to the Minister who would respond within an agreed time frame. The new Management Authority would be responsible for;

- developing a joint management infrastructure

- developing a participatory protocol

- season management - closures, net size, quotas etc.
- spawning area management - special provisions
- re-stocking - hatcheries
- restoration of Infrastructure - docks, packing houses
- restructuring of license system and reallocation of same

1.7 Subsistence Fishing

All stakeholders (including First Nation representatives) expressed concern over the adverse impacts of harvesting walleye during their upstream spring spawning migration. There is a perception that over the last 5 or 6 years First Nation people have increased their harvest of walleye during this critical spawning period. Anglers also were criticized for fishing with Treaty persons as a means to exceed creel limits. The Duck, Slater, Drake, Overflowing, Red Deer and Waterhen Rivers were mentioned as locations where harvesting walleye during the upstream spawning migration was adversely affecting Lake Winnipegosis walleye populations and detracting from their recovery.

Hard data regarding the quantity of walleye harvested by Treaty persons and anglers during the spawning migration are lacking. There does appear to be a perception among all stakeholders that there are a significant number of individuals fishing on a commercial scale under the authority of Treaty rights. Our perception is that First Nation representatives did not agree with this use of Treaty rights where it could result in a further reduction of Lake Winnipegosis walleye populations. However, First Nation representatives were not in favour of regulating individual Treaty fishing rights and felt that the problem could be addressed by increasing the role for First Nations in Lake management. An increased role in Lake management was cited as a necessary precondition before First Nation governments would become actively involved in discouraging the exercise of Treaty rights where the exercise of those rights was detrimental to the recovery of Lake Winnipegosis walleye populations.

FIGURE 1: Lake Winnipegosis Commercial

Walleye Harvests 1931 - 1997